CITY OF MOUNTAIN VIEW

Fire Department ▪ Fire and Environmental Protection Division ▪ 500 Castro Street ▪ City Hall - 4th Floor
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GUIDELINES FOR INSTALLATION OF TEMPORARY AND PERMANENT ABOVEGROUND DIESEL FUEL TANKS FOR EMERGENCY AND STANDBY POWER SYSTEMS LOCATED OUTSIDE OF BUILDINGS

(Updated 2/1/07)

For Use by Unidocs Member Agencies or where approved by your Local Jurisdiction
Authority cited: California Fire Code, Hazardous Materials Storage Ordinance

The Fire and Environmental Protection Division of the Mountain View Fire Department (650-903-6378) will review your submitted plans using this plan check guideline.

In the spaces provided, enter the page number in your submitted plans where the item is called out and highlight the item in your plans. Include brochures or manufacturer's cut sheets with the plans when asked for.

If all the required information asked for is included in your plans or attachments, they can be reviewed and approved by the Fire and Environmental Protection Division as quickly as five working days.

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Facility Name: _____

Address: _____

Architect Name: _____ Phone: _____ PC #:: _____ Date:_____

I. General Information

These guidelines are applicable to the installation of aboveground tanks using combustible liquids as fuel for emergency and standby generators. They apply to both temporary and permanent tank installations. These guidelines are a supplement to other requirements and/or guidelines, and are not all-inclusive.

II. Permits and Plans

- An installation permit is required from your local Planning and/or Building Department to install an emergency or standby generator tank, piping, and associated equipment;

- A new or modified Hazardous Materials Business Plan (HMBP) is required before placing the tank(s) in service;
- Notification of the electric utility is required;
- Permits may also be required from the Bay Area Air Quality Management District.

III. Definitions

The following definitions apply with regard to requirements specified in this document:
Temporary Tank - A tank which is on-site no longer than one (1) year.

IV. Quantity Limits

- Unprotected Tank: 660 gallons maximum;
- Protected Tank: 4,000 gallons maximum (16,000 gallons aggregate maximum)
  Contact the local jurisdiction regarding installing tanks exceeding these limits

A. Tanks

1. **Listing:** Each tank shall be designed and constructed in accordance with nationally recognized standards (UL 142/2244 or equivalent. UL 2085 is the listing for protected tanks). If it is not UL listed, provide documentation showing that it has been designed and constructed to that standard. (CFC §7902.1.8.1.1 & 7902.1.8.2.1) *Attach manufacturer's cut sheets of the tank, including the listing by UL or other nationally recognized association.*

2. **Protected Tanks**: Tanks greater than 660 gallons shall be "protected" tanks (provided with fire-resistive protection from a high-intensity liquid pool fire exposure). (CFC §7902.2.2.1 as amended) *Attach cut sheets on the protection provided.*

3. **Separation Distances:** Each tank shall be separated from property lines, important buildings, public ways, and other tanks in accordance with CFC Table 7902.2-F, below:

TABLE 7902.2-F (as amended by local ordinance)
Reference Table for Use In CFC Table 7902.2-A

Tank Capacity (gallons)	Minimum distance from property line of property which is or can be built upon, including the opposite side of a public way (feet)	Minimum distance from nearest side of any public way or from nearest important building on the same property (feet)
660 or less	10	10
661-4,000	15	10

- These distances can be reduced if the tank is protected by an unpierced two (2) hour fire-resistive wall extending not less than thirty (30) inches above and to the sides of the storage area.

Indicate on the plans the distances to the nearest property lines, public way and building.
Plan page number: _____

4. **Seismic Protection:** Seismic protection for tanks shall be provided in accordance with the Uniform Building Code. (CFC §7902.1.12)
   (Exception: For temporary tanks, wheels may be chocked in lieu of providing seismic protection).

   Indicate the type of seismic securement for the tank and generator on the plans.
   Plan page number: _____

5. **Vehicle Impact Protection:** Guard posts or other approved means shall be provided to protect tanks subject to vehicular damage. When installed, posts shall be: (CFC §7902.1.9.7 and §7902.2.9)
   a. Constructed of steel not less than 4 inches in diameter and concrete filled;
   b. Spaced not more than 4 feet between posts on center;
   c. Set not less than 3 feet deep in a concrete footing of not less than 15 inches in diameter;
   d. Set with the top of the posts not less than 3 feet aboveground;
   e. Located not less than 5 feet from the tank.
   (Note: For temporary tanks, K-rails or other substantial protection may be installed in lieu of guard posts).

   If the tank or generator is exposed to vehicular traffic, indicate the items listed above.
   Plan page number: _____

6. **Secondary Containment:** Tanks shall be provided with secondary containment (i.e. containment external to and separate from primary containment). Secondary containment shall be constructed of materials of sufficient thickness, density, and composition so as not to be structurally weakened as a result of contact with the fuel stored and capable of containing discharged fuel for a period of time equal to or longer than the maximum anticipated time sufficient to allow recovery of discharged fuel. It shall be capable of containing 110% of the volume of the primary tank if a single tank is used, or in the case of multiple tanks, 150% of the largest tank or 10% of the aggregate, whichever is larger. If secondary containment is open to rainfall or sprinkler flow, contact the local jurisdiction for appropriate calculations. (Local Ordinance)
   Indicate the type of secondary containment and include sizing calculations.
   Plan page number: _____

7. **Spill Protection:** For unprotected tanks ($\leq$ 660 gallons capacity), spill containers shall be provided on top-filling and/or top-withdrawal connections. Spill containers shall be non-combustible and shall be fixed to the tank. (Local Ordinance). *Indicate this on the plans.* Plan page number: _____

   For protected tanks (between 661 to 4,000 gallon capacity), spill containers of not less than 5 gallons shall be provided for each fill connection. For tanks with a remote fill connection, a portable spill container shall be provided. (CFC §7902.1.9.10). *Indicate this on the plans.* Plan page number: _____

8. **Overfill Protection:** Tanks shall be provided with equipment to prevent overfilling as per the following table.

For Non-Protected Tanks (≤660 gallon capacity)"

Physical Situation	Approved Overfill Methods	Reference
Level of liquid in tank IS within sight of the operator and filling device IS within immediate control of operator	Visual observation	HMSO
Level of liquid in tank is NOT within sight of the operator and/or filling device is NOT within immediate control of operator	High level (90%) alarm (with posted sign explaining alarm condition) Or Other liquid level limit control*	HMSO

* A liquid level limit control is a mechanical or electronic device which physically limits the level of liquid in the tank (e.g. ball float or flapper valve in the fill line, dispenser nozzle shutoff, etc.).

For Protected Tanks (661-4,000 gallon capacity):

Physical Situation	Approved Overfill Methods	Reference
At 85% of Tank Capacity	Audible or visual signal to notify tank filler; Or Tank level gauge marked at 85%; Or Other approved means.	CFC 7902.1.9.8
	AND	
At 90% of Tank Capacity	Mechanical Shutoff Device	CFC 7902.1.9.8

* A permanent sign shall be provided at the fill point documenting the filling procedure and tank calibration chart. The filling procedure shall require the person filling the tank to determine the gallonage required to fill it to 90% of capacity before commencing the fill operation. (CFC §7902.1.9.8)

Indicate on the plans how the tank will be filled, staging area for the delivery truck, and the type of limit-level control to be used. If an electronic high-level sensor is used, attach manufacturer's cut sheets on the sensor and indicate the location of the alarm panel on the plans.
Plan page number: _____

9. **Projectile Protection:** When a projectile test is required by the chief (for protected tanks between 661 and 4,000 gallons), the protected tank shall comply with the requirements for bullet resistance (see CFC 7701.3.4.3). (CFC §7902.1.9.5). *Attach a copy of the projectile test.*

B. Piping Systems

1. **Support:** Piping systems shall be substantially supported and protected against physical damage and excessive stresses arising from settlement, vibration, expansion or contraction, or exposure to fire. (CFC §7901.11.6) *Show the support and protection for the piping system on the plans.*
Plan page number: _____

2. **Seismic Protection:** Seismic protection for piping, tank supports and connections shall be provided in accordance with the Uniform Building Code. (CFC §8001.4.3.2)
(Exception: Not normally required for temporary tanks.)
Indicate the type of seismic securement for the piping, tank supports and connections on the plans.
Plan page number: _____

3. **Low Melting Point Materials:** For primary piping, low melting point materials such as aluminum, copper, and brass; materials which soften on fire exposure such as non-metallic materials; or non-ductile materials such as cast iron, shall be within their pressure and temperature limitations. When such materials are used, they shall be either: (CFC §7901.11.1.2)
   a. Suitably protected against fire exposure; or
   b. Located such that leakage resulting from failure would not unduly expose persons, buildings, or structures; or
   c. Located where leakage can readily be controlled by operation of accessible remotely-located valves.

   Indicate whether any low melt-point materials will be used, if so which ones, and how they will meet the above criteria. Plan page number: _____

4. **Vehicle Impact Protection:** Guard posts or other approved means shall be provided to protect piping, valves or fittings subject to vehicular damage. When installed, posts shall be: (CFC §7901.11.2)
   a. Constructed of steel not less than 4 inches in diameter and concrete filled;
   b. Spaced not more than 4 feet between posts on center;
   c. Set not less than 3 feet deep in a concrete footing of not less than 15 inches in diameter;
   d. Set with the top of the posts not less than 3 feet aboveground;
   e. Located not less than 5 feet from the tank.

   (Note: For temporary tanks, K-rails or other substantial protection may be installed in lieu of guard posts.)

   If piping, valves or fittings are subject to vehicular traffic, indicate the items listed above.
   Plan page number: _____

5. **Secondary Containment:** Supply and return piping shall be provided with secondary containment (i.e. containment external to and separate from primary containment). Secondary containment shall be constructed of materials of sufficient thickness, density, and composition so as not to be structurally weakened as a result of contact with the fuel stored, and capable of containing discharged fuel for a period of time equal to or longer than the maximum anticipated time sufficient to allow recovery of discharged fuel. (Local Ordinance)

   Potentially acceptable methods of containment include:
   - Double-contained piping;
   - Metal pan;
   - Concrete berm;
   - "Portable" berm (made of diesel-compatible materials);
   - Containment enclosure.

   Indicate the type of secondary containment on the plans. Plan page number: _____

6. **Connections:** Connections to a tank located below normal liquid level shall be provided with internal or external control valves located as close as practical to the shell of the tank. When external, such valves, and their connections to the tank, shall be of steel. (CFC §7901.11.5)
   Indicate any connections to the tank below normal liquid level and control valves.
   Plan page number: _____

7. **Fill Pipe Length:** For tanks with a top-fill connection, metallic fill pipes shall terminate within 6 inches of the tank bottom to minimize static electricity. (CFC §7902.2.7.2)
   Show the fill pipe location on the plans. Plan page number: _____

8. **Filling/Withdrawal Connections:** Filling and withdrawal connections which are made and broken shall be located outside of buildings and not less than 5 feet from building openings. (CFC §7902.2.7.2)
   Show the location of the filling/withdrawal connection and distance from the nearest building. Plan page number: _____

9. **Normal Venting:** Normal venting shall be provided for the primary tank as follows:
   a. The diameter of the normal vent opening shall be equal to the size of the fill/withdrawal opening, or at a minimum, 1-1/4 inch, whichever is greater. (CFC §7902.1.13.8.1)
      Indicate the vent diameter on the plans. Plan page number: _____

   b. Vapors shall be directed to discharge upward or horizontally away from closely adjacent walls, and the top of the vent shall be a minimum of 12 feet above adjacent ground level. The vent opening shall be at least 5 feet from any building opening and/or property line. (CFC §7902.1.13.4)
      Indicate the height of the vent and the distance between the vent opening and the nearest building opening and property lines on the plans. Plan page number: _____

10. **Normal Vent Piping:** Vent pipes shall be installed such that they will drain toward the tank without sags or traps in which liquid can collect. Vent pipes shall be installed such that they are not subject to physical damage or vibration. (CFC §7902.1.13.5)
    Show the vent path from the tank to the terminus on the plans. Plan page number: _____

11. **Emergency Venting:** Emergency venting shall be supplied as follows:
    a. Tanks shall be equipped with adequate additional venting that will relieve excessive internal pressure caused by exposure to fires. (CFC §7902.2.6.1)
    b. The pressure relief device shall not discharge inside a building. (CFC §7902.2.6.5.1)
    (Note: for the purposes of emergency venting requirements, enclosures which can be occupied are considered buildings whereas enclosures which cannot be occupied are not considered buildings).

    Attach manufacturer's cut sheets on the pressure relief valve and calculations that determine adequate sizing. Plan page number: _____

12. **Flame Arrestors:** For protected tanks (i.e. between 661 and 4,000 gallon capacity), approved flame arrestors or pressure-vacuum breather valves shall be installed in normal vents. (CFC §7902.1.9.4)
    Attach manufacturer's cut sheets on the flame arrestor or pressure-vacuum breather.

13. **Anti-Siphon Devices**: Approved anti-siphon devices shall be installed in each external pipe connected to the tank when the pipe extends below the level of the top of the tank. (CFC §7902.1.9.12)
    Attach manufacturer's cut sheets on the anti-siphon device.

C. Additional Requirements

1. **Security:** Storage, dispensing, use, and handling areas shall be secured against unauthorized entry and safeguarded with such protective facilities as public safety requires. (CFC §8001.11.2)
   Indicate how the tank and generator will be secured and protected. Plan page number: _____

2. **Electrical:** Electrical wiring and equipment shall be installed in accordance with the Electrical Code. (CFC §8001.11.4)
   Indicate the type and class of electrical wiring on the plans. Plan page number: _____

3. **Monitoring:** Tank and piping secondary containment systems shall be monitored either visually or electronically. Monitoring shall occur at the low point of each secondary containment system. If electronic monitoring is used, it shall be connected to attention-getting visual and audible alarms. Contact your local agency for approved monitoring methods. (Local Ordinance)
   (Note: If response to monitoring alarms is hampered due to absence of site response personnel or there is a history of problems with alarm response at the site, the local agency may require shutdown of the generator during alarm activation.)

   Indicate the form of monitoring and location of the alarm, if applicable.
   Plan page number: _____

4. **Testing*:** Prior to being placed in service, tanks and associated piping shall be field tested in accordance with the following: (CFC §7901.11.10 & 7902.1.8.2.5)

	Field Test	**Duration**
Primary Tank Test	5 p.s.i.g.	30 minutes
Secondary Tank Test	3 p.s.i.g.	30 minutes
Primary Piping Test	Hydrostatically at 150% of anticipated pressure Or Pneumatically at 110% of anticipated pressure	30 minutes
Secondary Piping Test	5 p.s.i.g.	30 minutes

   * If the manufacturer's specifications do not support the above testing procedures, follow the manufacturer's recommended procedure.

   Indicate that you will contact the Fire Department to observe this field test.
   Plan page number: _____

5. **Hazardous Materials Signage and Labeling:** The tanks shall be labeled "Diesel Fuel Only" with red letters at least 3 inches high on a white background. All piping shall be labeled. (CFC §7901.9 & 7902.1.3.2). *Indicate this on the plans.* Plan page number: _____

6. **Additional Signage:** A sign shall be placed at the main electrical shut-off box identifying type and location of all normal and emergency power sources connected at that location. (CEC §702-8a)

Indicate the location of the main electrical shutoff and the signage on the plans.
Plan page number: _____

7. **Fire Protection:** At least one 40:BC portable fire extinguisher shall be provided near and within sight of the equipment. (CFC §7901.5.3)
Indicate the size and location of the fire extinguishers on the plans. Plan page number: _____

8. **Access:** The required width of a fire apparatus access road (20') shall not be obstructed in any manner, including the siting of generator/tank assemblies. (CFC §902.2.4.)
If applicable, indicate this on the plans. Plan page number: _____

9. **Spill Prevention Control and Countermeasure (SPCC) Plan**: The owner or operator of any facility that stores more than 1,320 gallons of petroleum aboveground, or stores petroleum in any aboveground tank larger than 660 gallons in capacity, must prepare an SPCC Plan in accordance with guidelines contained in Part 112 of Title 40 of the Code of Federal Regulations. Information regarding SPCC Plan preparation and submittal requirements is available on the Internet at www.swrcb.ca.gov/~cwphome/agt/index.htm. [HSC §2527005(c)]

(Exception: Tank facilities located on a farm, nursery, logging site, or construction site are not required to prepare an SPCC Plan if no tank exceeds 20,000 gallons and cumulative storage capacity does not exceed 100,000 gallons). Plan page number: _____